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A NEW SPECIES OF ENDOTHIA

STEPHEN C. BRUNER

(WITH PLATE 192, CONTAINING 5 FIGURES)

On the grounds of the Estación Experimental Agronómica and elsewhere in the vicinity of Santiago de las Vegas, the writer has found an *Endothia* to be quite common on several species of *Eucalyptus* and on the mango (*Mangifera indica*). Microscopical and cultural studies have shown this form to be distinct from any previously described species. On *Eucalyptus,* the fungus is usually found on the bark of dead or injured trees. It is also sometimes seen on the outer layers of rough bark on large healthy trees. On mango, the fungus has been found only on dead branches lying on the ground. No perithecia have yet been obtained from this source, but in culture this form is indistinguishable from that on *Eucalyptus.* The pycnidial stage of the fungus has also been observed on the avocado (*Persea gratissima*) and the jobo (*Spondias mombin*). A specimen on the last was collected near Herradura in the province of Pinar del Rio by Dr. C. L. Shear, of the United States Department of Agriculture, and kindly presented to the writer by him. This is the only instance so far known of the occurrence of this *Endothia* on a native tree, although the fungus itself is undoubtedly of Cuban origin.

In general characters, the fungus rather closely resembles *Endothia radicalis* (Schw.) DeNot. However, the ascospores are larger and slightly different in form, and in culture the color reactions of the two are quite distinct.

CULTURAL CHARACTERS

Boiled rice, sterile *Eucalyptus* twigs, and potato agar were the media found most satisfactory in studying this fungus, although others were used to some extent. These were prepared according to the following formulae:

Rice. Place 3 grams of dry commercial rice and 10 cc. of distilled water in test tubes and autoclave at 115° C. for one-half hour.

Eucalyptus twigs. Select twigs of *Eucalyptus botryoides* about ¼ inch in diameter, and by alternate diagonal and transverse cuts divide into sections approximately 1½ inches long. Place with the slanted surface upward in test tubes containing 2 or 3 c.c. of distilled water. Autoclave for 15 minutes at 115° C.

Potato agar. Boil 250 grams of sliced potato in 1000 cc. of distilled water for 1 hour. Filter through cotton. Restore loss due to evaporation, etc. Add 115 grams of shredded agar; steam until thoroughly dissolved. Filter through cotton. Tube and autoclave for 15 minutes at 115° C.

All cultures were incubated under ordinary laboratory conditions, the mean temperature during the period being 21.5° C.

Cultures on Rice.—On this medium the behavior of the fungus is characterized by a rather tardy and scant production of pigment—a character which readily distinguishes it from the other known species of *Endothia* occurring in North America and the West Indies. Within three or four days after inoculation, there is a somewhat short cottony growth of mycelium over the upper surfaces of the medium. After five to seven days, small points of orange-yellow appear in places where the pycnidia are beginning to form and the older aerial mycelium changes to ivory-white or pale-buff. In about fifteen days, the rather large yellow pycnidia mature and exude moist masses or tendrils of bright-yellow or orange-colored spores. No marked submerged color changes of any kind take place, the medium merely turning to a pale-dirty-buff as growth proceeds. The aerial mycelium remains white or pale-buff and the yellow color is seen only where the pycnidia have developed. No further changes occur except that in old cultures pycnidia formed against the sides of the tubes often become dark-brown.

Cultures on Eucalyptus Twigs.—Cultures five days old show a thin web-like growth over the cut surfaces, with here and there small masses of yellowish mycelium where pycnidia are beginning to form. Two days later, a few pycnidia mature and the exudation of spore masses begins. Pycnidia continue to form on the cut surfaces and later on the bark. The surface growth remains rather thin and clinging, becoming pale-buff when old. Cultures fifteen days old show numerous large pale-yellow or buff pycnidia on the cut surfaces and a smaller number scattered over the bark. These in many cases exude moist masses or tendrils of orange-yellow spores. Further changes consist mainly in the formation of additional pycnidia and a somewhat heavier growth of surface mycelium.

Cultures on Potato Agar.—Single ascospores when transferred to tubes of potato agar produce in one week hyaline growths which extend on the surface from 4 to 10 mm. from the point of inoculation. The submerged growth is somewhat less extensive. The advancing edges are irregularly denticulate and slightly undulate in outline, and the surface presents a gently contoured, somewhat fluted appearance. In from 8 to 10 days after inoculation numbers of yellow pycnidia are formed in a group on the lower portion of the slant. These are more or less connected by a short cream white growth of surface mycelium. Except for a small amount of downy white mycelium at the upper edge of the medium and an occasional tuft at the point of inoculation, no other surface growth of any kind is developed. The pycnidia soon after their formation emit masses of orange-yellow spores. No submerged color is produced and, except for the gradual drying of the medium, there are no further changes of any kind.

Endothia havanensis sp. nov.

Stroma innate, then erumpent, gregarious, at first bright-yellow, later orange-colored, finally yellow-brown when very old, interior immediately surrounding perithecia lighter in color than outer layers, cream-white or pale-buff in newly formed stromata, commonly roundish wart-shaped to sub-elongate, 2–15 × 2–4 mm., varying according to the situation in which formed. Perithecia black, globose with long necks, deeply imbedded in stroma, usually 275–400 μ in diameter; ostioles dark, distinct, exserted on slender protuberances of varying lengths, these commonly 200–1000 × 90–135 μ; asci sub-clavate, eight-spored, aparaphysate, 33–41 × 5–7.5 μ; ascospores subdistichous, fusoid, two-celled, constricted at the septum, usually minutely guttulate, hyaline, often slightly inequilateral, 7.47–9.54 × 2.92–4.15 μ; pycnidia formed as irregular cavities in the stroma; pycnospores minute, rod-shaped with rounded ends, hyaline, 2.9–4.5 × .83–1.66 μ; erupting from indefinite ostioles in yellow or orange-yellow tendrils.

Habitat in dead bark of *Eucalyptus occidentalis* Endl., *E. botryoides* Sm., *E. rostrata* Schlecht., *E. microphylla* Willd., *E. robusta* Sm., *Persea gratissima* Gaertn. f., and *Mangifera indica* L., near Santiago de las Vegas, Havana, and *Spondias mombin* L., near Herradura, Pinar del Rio, Cuba.

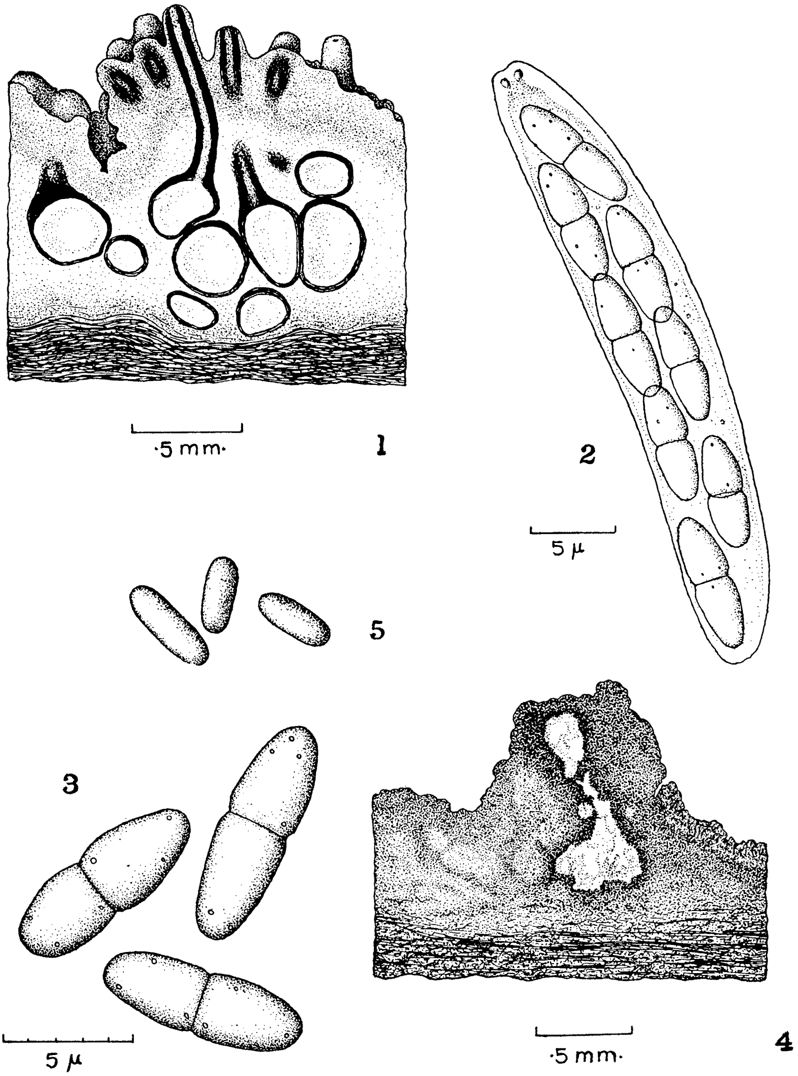
The writer is indebted to Dr. C. L. Shear for supplying cultures and specimens of *Endothia longirostris* Earle and to Mr. R. H. Feild of Taylorsville, N. C., for specimens of *Endothia radicalis* (Schw.) DeNot.

ESTACIÓN EXPERIMENTAL AGRONÓMICA,
SANTIAGO DE LAS VEGAS, CUBA.

EXPLANATION OF PLATE CXCII

Endothia havanensis Bruner

Fig. 1. Sectional view of stroma showing perithecia.
Fig. 2. An ascus.
Fig. 3. Ascospores.
Fig. 4. Section of young stroma showing pycnidial cavity.
Fig. 5. Pycnospores (see Fig. 3 for scale).
All figures drawn with the aid of a camera lucida.



ENDOTHIA HAVANENSIS BRUNER